McKinsey Analytics

The state of AI in 2021

As business's adoption of AI continues to grow, the companies reaping the biggest bottom-line benefits are differentiating themselves through their use of more sophisticated tools and practices.

December 2021

The results of our latest McKinsey Global Survey on AI indicate that AI adoption[1] continues to grow and that the benefits remain significant—though in the COVID-19 pandemic's first year, they were felt more strongly on the cost-savings front than the top line. As AI's use in business becomes more common, the tools and best practices to make the most out of AI have also become more sophisticated.

We looked at the practices of the companies seeing the biggest earnings boost from AI and found that they are not only following more of both the core *and* advanced practices, including machine-learning operations (MLOps), that underpin success but also spending more efficiently on AI and taking more advantage of cloud technologies. Additionally, they are more likely than other organizations to engage in a range of activities to mitigate their AI-related risks—an area that continues to be a shortcoming for many companies' AI efforts.

AI adoption and impact

Findings from the 2021 survey indicate that AI adoption is continuing its steady rise: 56 percent of all respondents report adoption in at least one function, up from 50 percent in 2020. The newest results suggest that AI adoption since last year has increased most at companies headquartered in emerging economies, which includes China, the Middle East and North Africa: 57 percent of respondents report adoption, up from 45 percent in 2020. And across regions, the adoption rate is highest at Indian companies, followed closely by those in Asia–Pacific.

About the research

The online survey was in the field from May 18 to June 29, 2021, and garnered responses from 1,843 participants representing the full range of regions, industries, company sizes, functional specialties, and tenures. Of those respondents, 1,013 said their organizations had adopted AI in at least one function and were asked questions about their organizations' AI use. To adjust for differences in response rates, the data are weighted by the contribution of each respondent's nation to global GDP.

As we saw in the past two surveys, the business functions where AI adoption is most common are service operations, product and service development, and marketing and sales, though the most popular use cases span a range of functions. The top three use cases are service-operations optimization, AI-based enhancement of products, and contact-center automation, with the biggest percentage-point increase in the use of AI being in companies' marketing-budget allocation and spending effectiveness (Exhibit 1).

The results also suggest that AI's impact on the bottom line is growing. The share of respondents reporting at least 5 percent of earnings before interest and taxes (EBIT) that's attributable to AI has increased year over year to 27 percent, up from 22 percent in the previous survey.

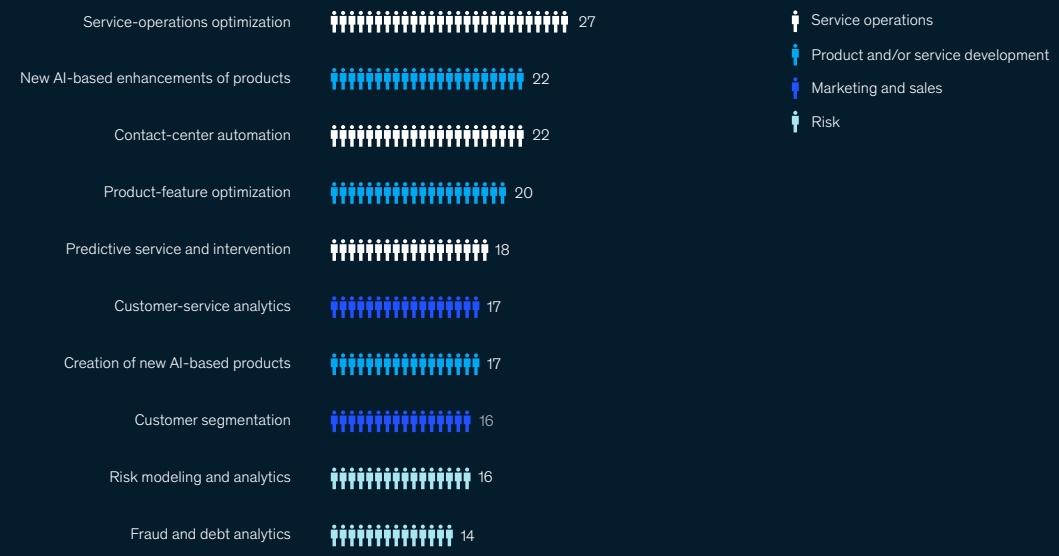
[1] We define "adoption" as the use of AI capabilities (for example, machine learning, computer vision, natural-language processing) in at least one business function.

Exhibit 1

The most popular AI use cases span a range of functional activities.

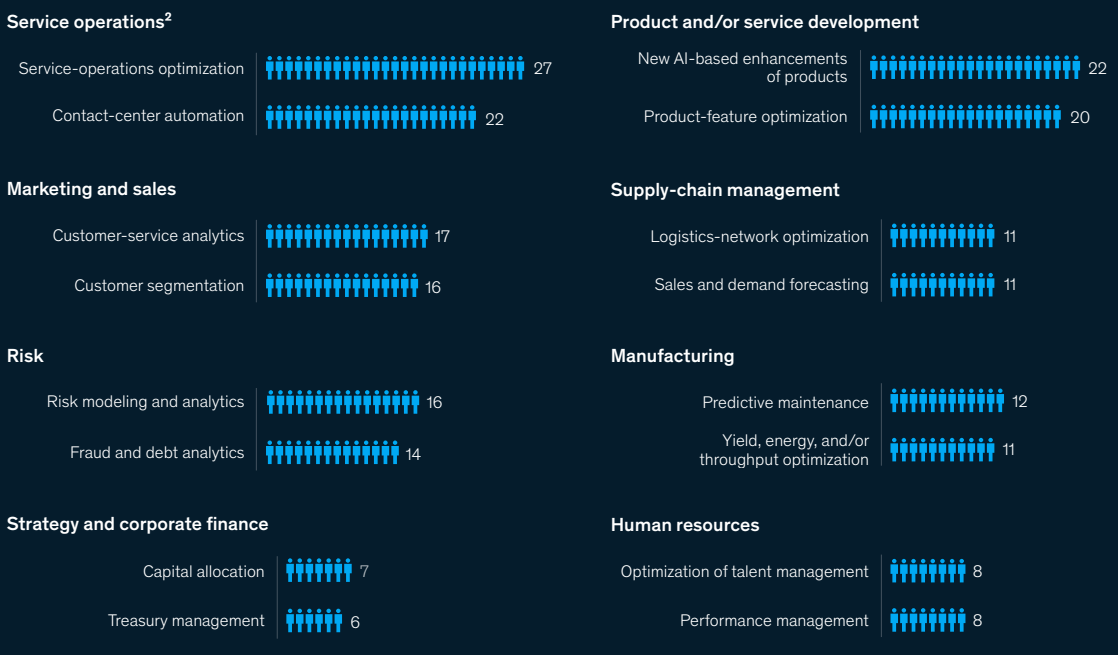
Top use cases | Use cases by function

Most commonly adopted AI use cases,[1] by function, % of respondents



Top use cases | Use cases by function

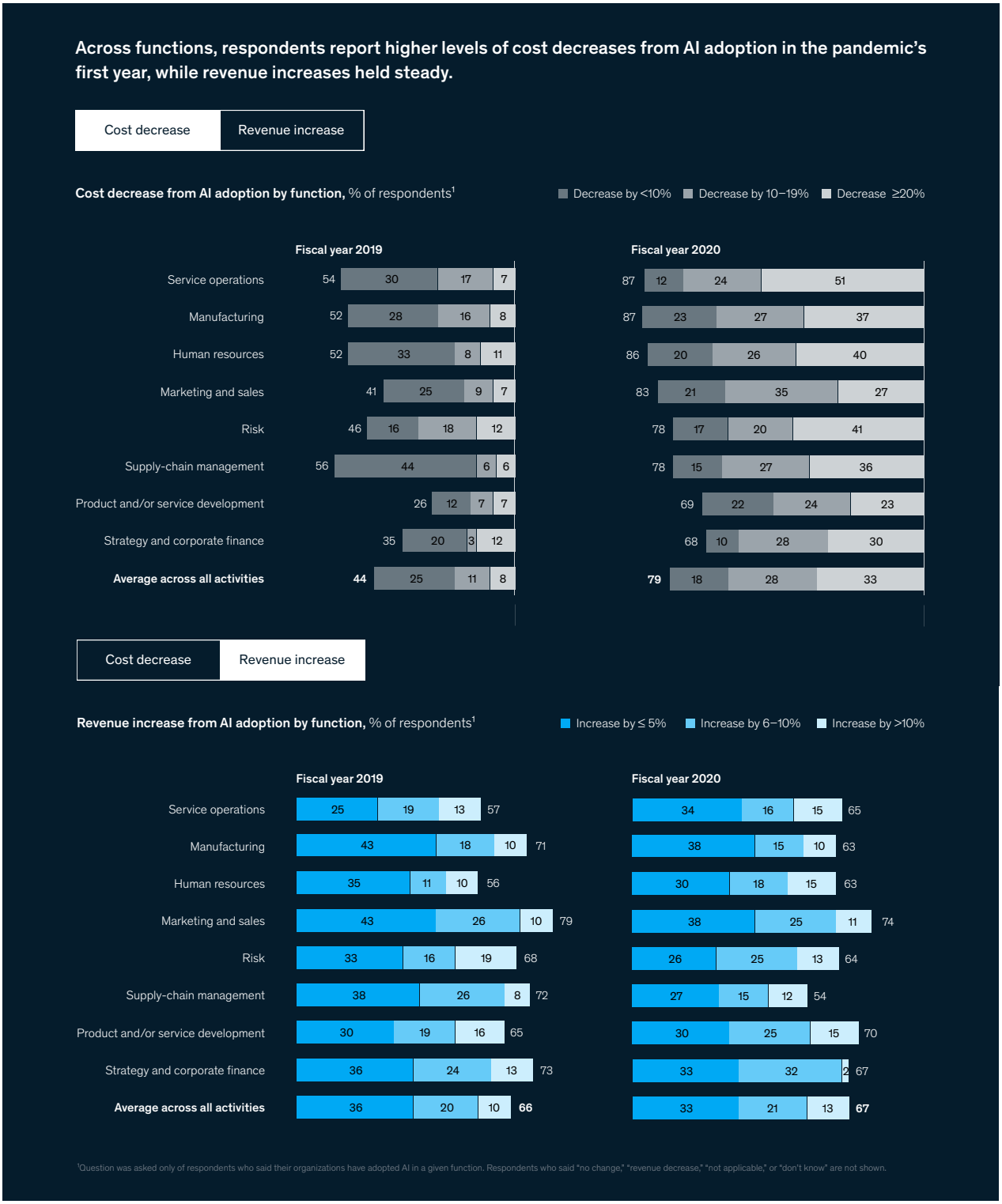
Most commonly adopted AI use cases within each business function,[1] % of respondents



[1] Question was asked only of respondents who said their organizations have adopted AI in a given function.
[2] Eg, field services, customer care, back office.

And while AI's revenue benefits have held steady or even decreased since the previous survey—especially for supply-chain management, where AI was unlikely to compensate for the pandemic era's global supply-chain challenges—the opposite is true of costs (Exhibit 2). Respondents report significantly greater cost savings from AI than they did previously in every function, with the biggest year-over-year changes in the shares reporting cost takeout from using AI in product and service development, marketing and sales, and strategy and corporate finance.

Exhibit 2



Finally, respondents say AI's prospects remain strong. Nearly two-thirds say their companies' investments in AI will continue to increase over the next three years, similar to the results from the 2020 survey.

The differentiators of AI outperformance

We sought to understand more about the factors and practices that differentiate the best AI programs from all others: specifically, at the organizations at which respondents attribute at least 20 percent of EBIT to their use of AI—our "AI high performers." With adoption becoming ever more commonplace, we asked new questions about more advanced AI practices, particularly those involved in MLOps, a best-practice approach to building and deploying machine-learning-based AI that has emerged over the past few years.

While organizations seeing lower returns from AI are increasingly engaging in core AI practices, AI high performers are still more likely to engage in most of the core practices. High performers also engage in most of the advanced AI practices more often than others do (Exhibit 3).

Exhibit 3

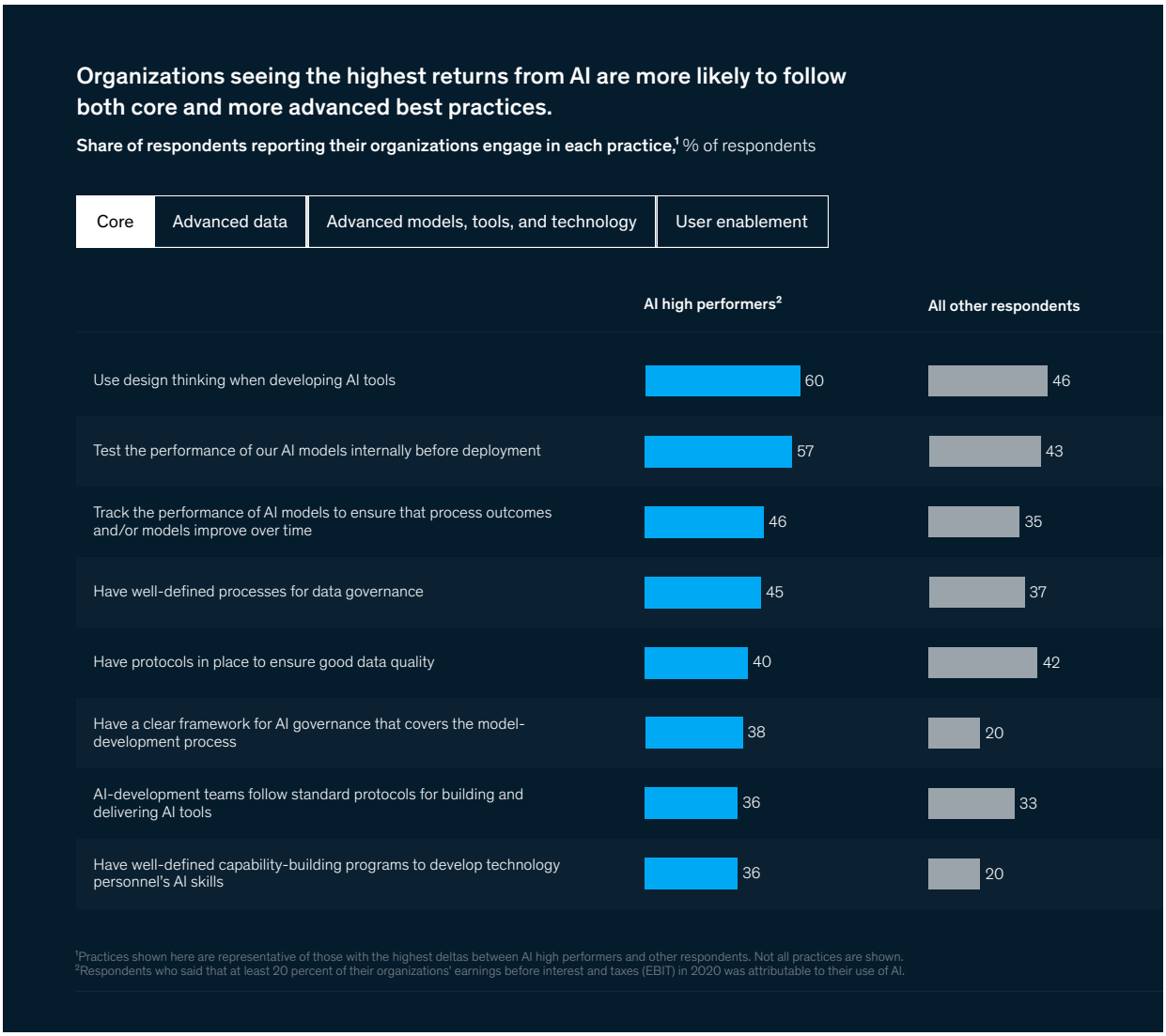


Exhibit 3 cont.

Organizations seeing the highest returns from AI are more likely to follow both core and more advanced best practices.

Share of respondents reporting their organizations engage in each practice,[1] % of respondents

Core | **Advanced data** | Advanced models, tools, and technology | User enablement

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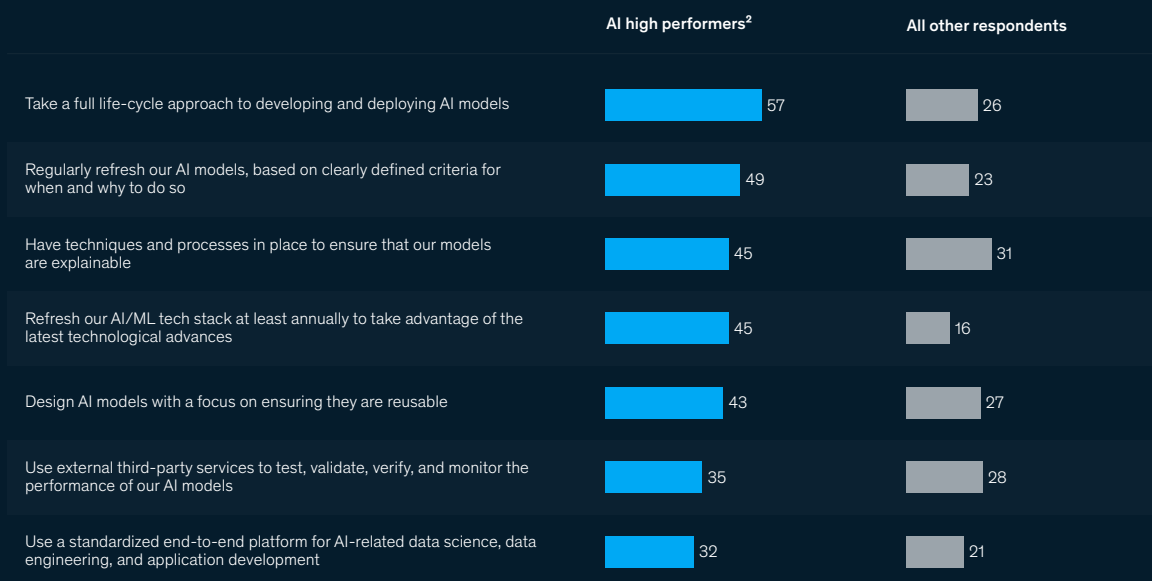
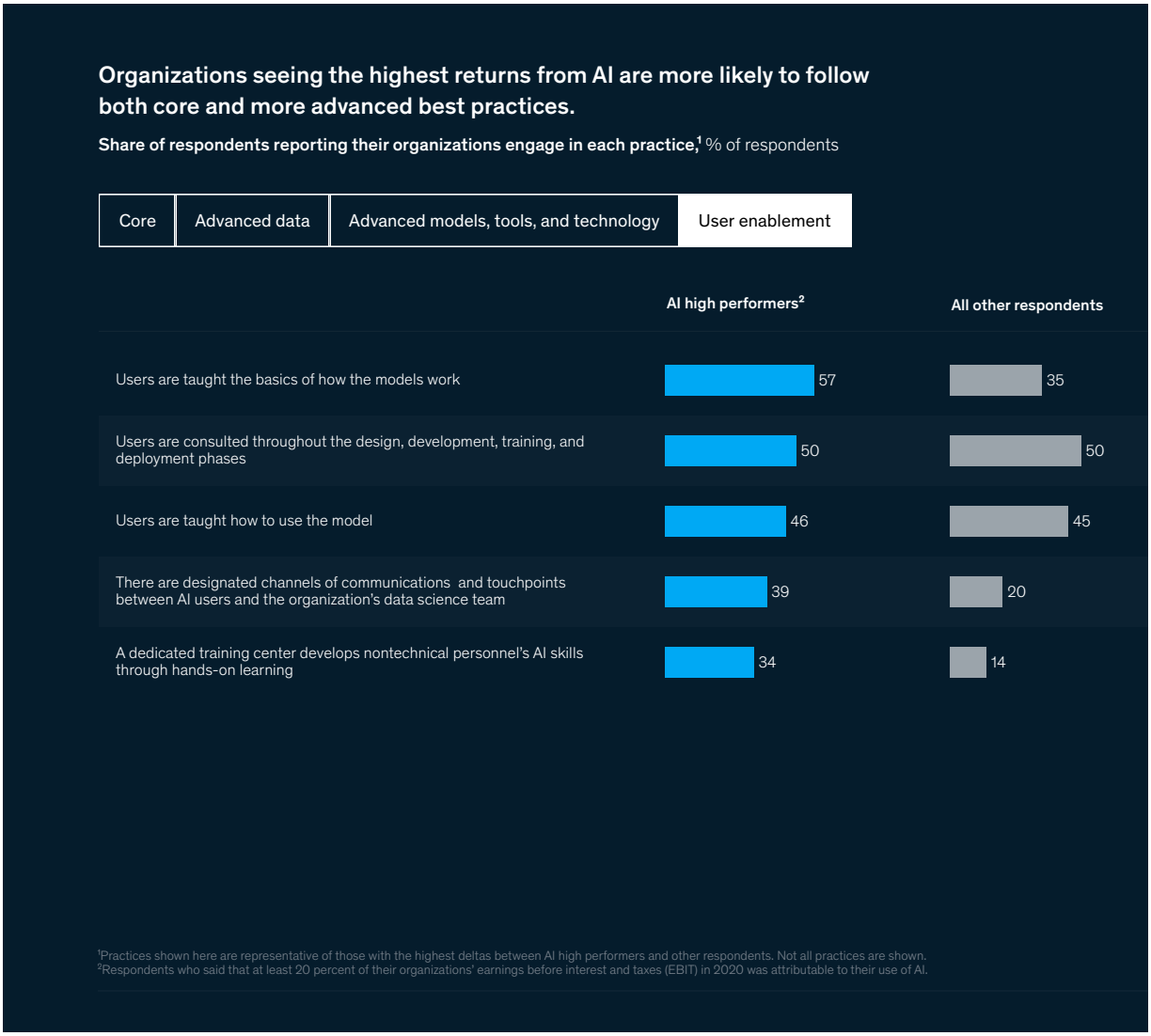


[1]Practices shown here are representative of those with the highest deltas between AI high performers and other respondents. Not all practices are shown.
[2]Respondents who said that at least 20 percent of their organizations' earnings before interest and taxes (EBIT) in 2020 was attributable to their use of AI.

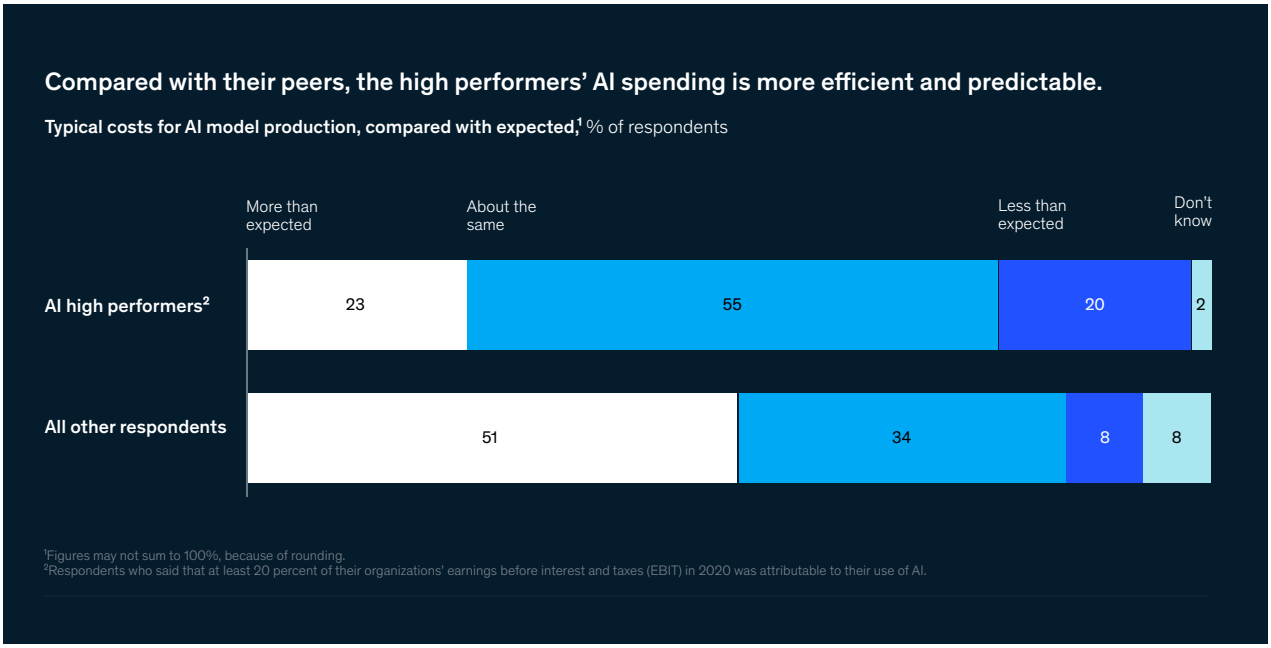
Exhibit 3 cont.



There's evidence that engaging in such practices is helping high performers industrialize and professionalize their AI work, which leads to better results *and* greater efficiency and predictability in their AI spending. Three-quarters of AI high performers say the cost to produce AI models has been on par with or even less than they expected, whereas half of all other respondents say their companies' AI project costs were *higher* than expected (Exhibit 4). Going forward, the AI high performers' work could push them farther ahead of the pack, since both groups plan to increase their spending on AI by roughly the same amount.

The survey results also suggest that AI high performers could be gaining some of their efficiency by using the cloud. Most companies—whether they are high performers or not—tend to use a mix of cloud and on-premises platforms for AI similar to what they use for overall IT workloads. But the high performers use cloud infrastructure much more than their peers do: 64 percent of their AI workloads run on public or hybrid cloud, compared with 44 percent at other companies. This group is also accessing a wider range of AI capabilities and techniques on a public cloud. For example, they are twice as likely as the rest to say they tap the cloud for natural-language-speech understanding and facial-recognition capabilities.

Exhibit 4



Managing AI risks

No matter a company's AI performance, risk management remains an area where many have room to improve—which we have seen in previous survey results. Cybersecurity remains the most recognized risk among respondents, yet a smaller share says so than did in 2020, despite the rising threat of cyberincidents seen throughout the COVID-19 pandemic. On a positive note, respondents report increasing focus on equity and fairness as a relevant risk and one that their companies are mitigating.

Across regions, survey respondents report some notable changes since the previous survey and very different opinions on cybersecurity risks (Exhibit 5). In developed economies, their views on the biggest risks have held relatively steady since 2020, though 57 percent (versus 63 percent last year) cite cybersecurity as a relevant AI risk. In emerging economies, respondents report a more dramatic decline in the relevance and mitigation of several of the top risks. Yet, they also report personal and individual privacy as a relevant AI risk more often.

When asked why companies aren't mitigating all relevant risks, respondents most often say it's because they lack capacity to address the full range of risks they face and have had to prioritize. Notably, the second-most common response from those seeing lower returns from AI adoption is that they are unclear on the extent of their exposure to AI risks (29 percent versus only 17 percent of AI high performers). And by geography, respondents in emerging economies are more likely than others to report that they are waiting until clearer regulations for risk mitigation are in place, and that they know from formal assessments that mitigation is more costly than the consequences of a risk-related incident.

Exhibit 5

The management of AI risks remains an area for significant improvement, as respondents report a waning focus on cyber—especially in emerging economies.

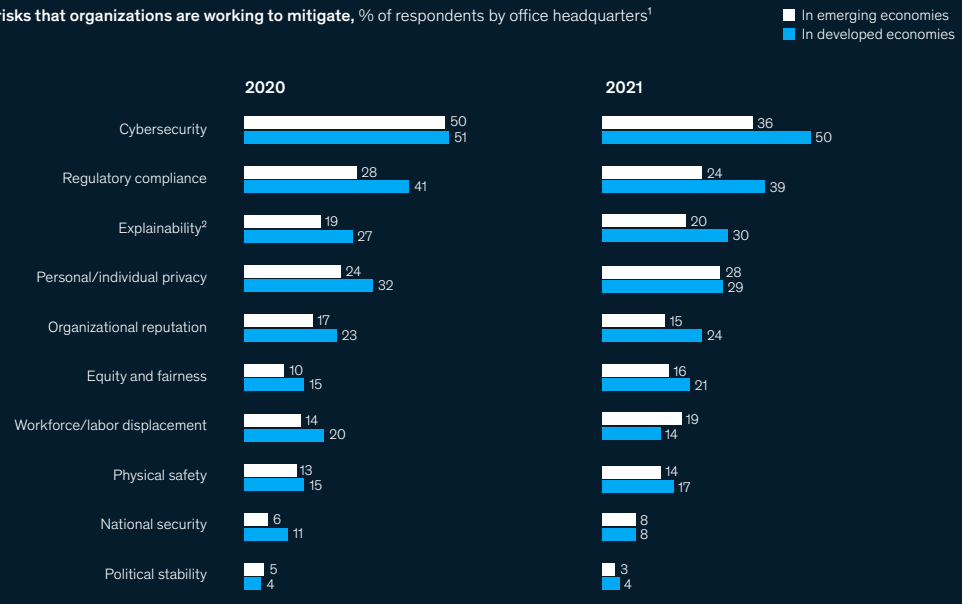
Relevant risks | Mitigated risks

AI risks that organizations consider relevant, % of respondents by office headquarters[1]

The management of AI risks remains an area for significant improvement, as respondents report a waning focus on cyber—especially in emerging economies.

Relevant risks | Mitigated risks

AI risks that organizations are working to mitigate, % of respondents by office headquarters[1]



[1] "Emerging economies" includes respondents in Association of Southeast Asian Nations, China, India, Latin America, Middle East, North Africa, South Asia, and sub-Saharan Africa, and "developed economies" includes respondents in developed Asia, Europe, and North America. Question was asked only of respondents who said their organizations have adopted AI in ≥1 business function. Those who answered "don't know" are not shown.
[2] That is, the ability to explain how AI models come to their decisions.

Additional survey results suggest a way forward for companies that continue to struggle with risk management in AI. We asked about a range of risk-mitigation practices related to model documentation, data validation, and checks on bias. And in most cases, AI high performers are more likely than other organizations to engage in these practices (Exhibit 6).

Exhibit 6

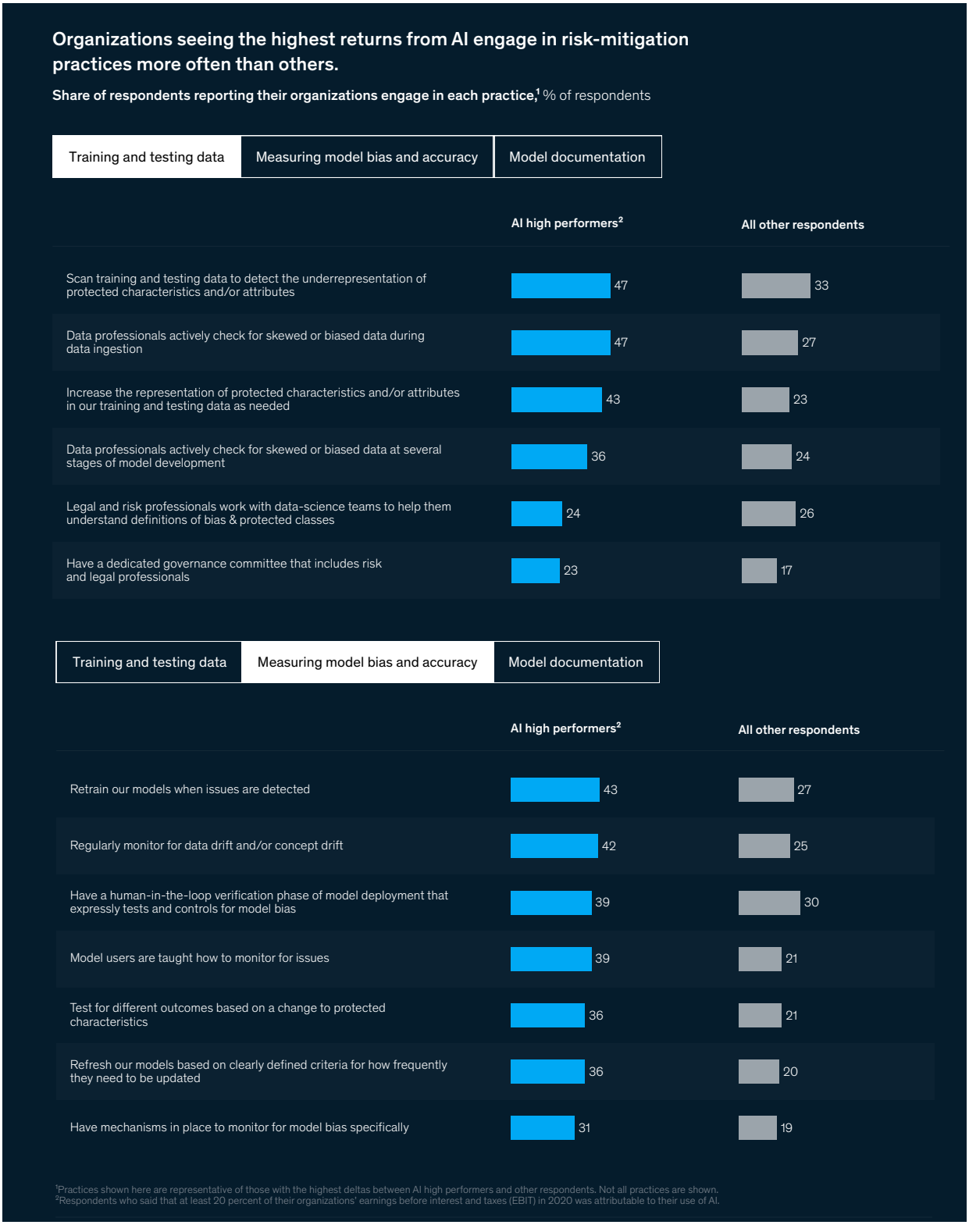
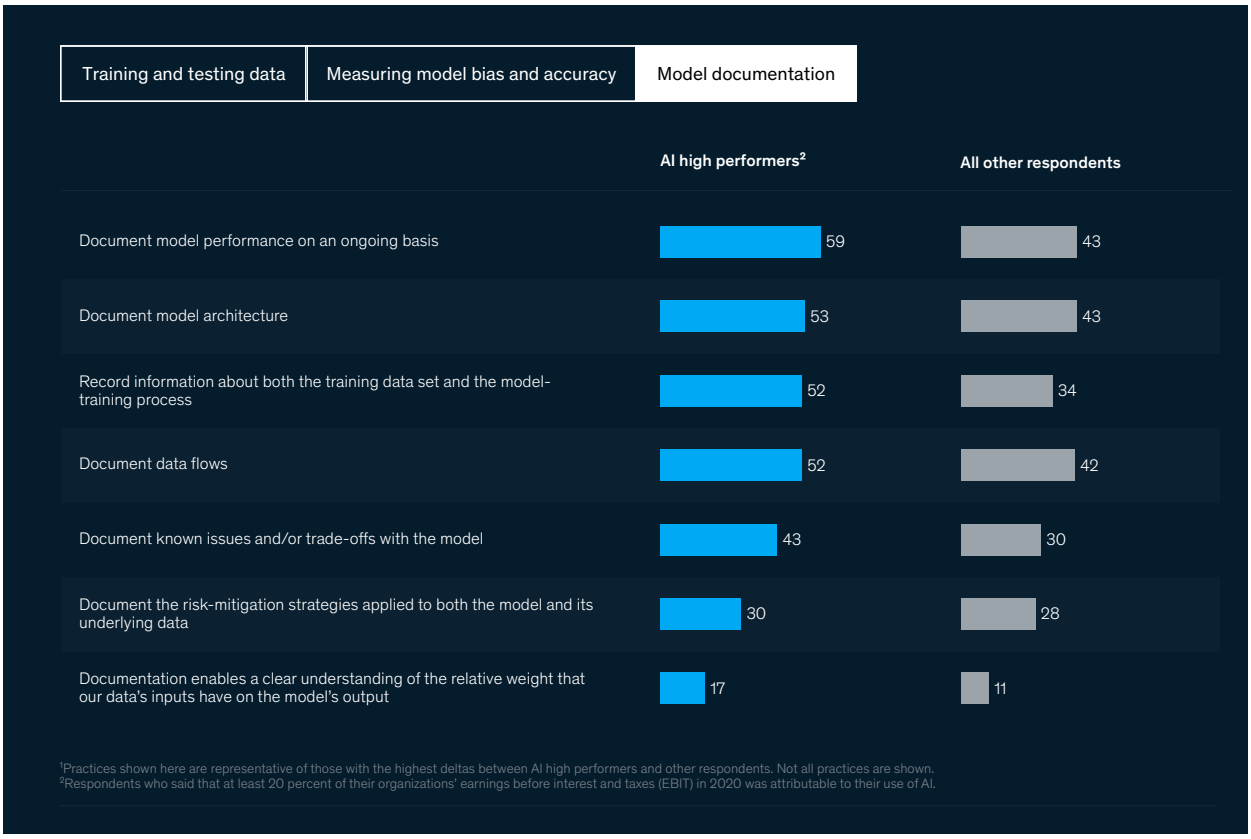


Exhibit 6 cont.



The survey content and analysis were developed by **Michael Chui**, a partner of the McKinsey Global Institute and a partner in McKinsey's Bay Area office; **Bryce Hall**, an associate partner in the Washington, DC, office; **Alex Singla**, a senior partner in the Chicago office; and **Alex Sukharevsky,** a senior partner in the Moscow office.

They wish to thank Jacomo Corbo, David DeLallo, Liz Grennan, Heather Hanselman, and Kia Javanmardian for their contributions to this article.